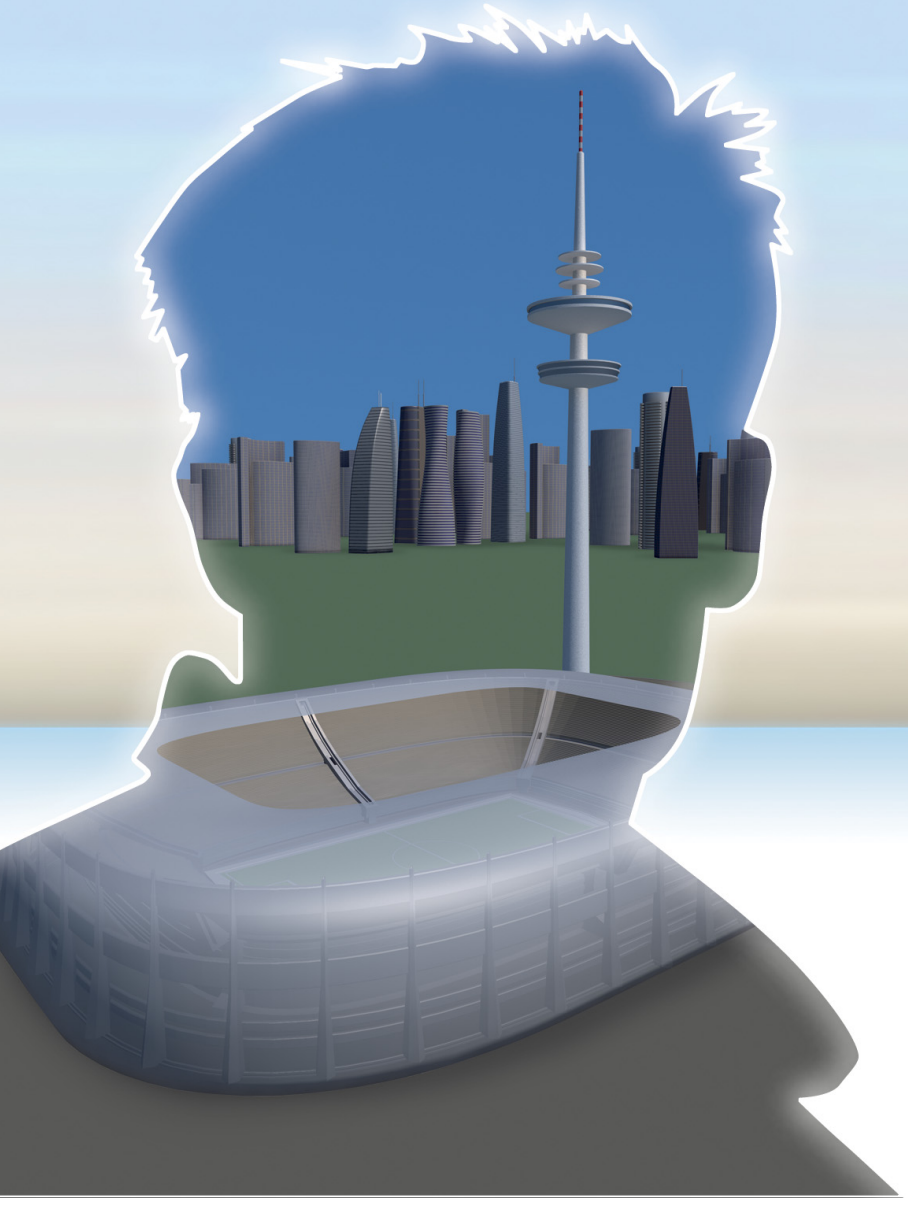
Leica Viva TPS
TPS1200+
Equipment List



- when it has to be **right**

Leica Geosystems

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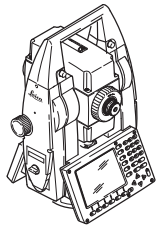
Total Station

1 Total Station

1.1 Models



	TC	TCR	TCRM	TCA	TCP	TCRA	TCRP
Angle measurement	●	●	●	●	●	●	●
Distance measurement (to reflector IR-Mode)	●	●	●	●	●	●	●
Dist. meas. without reflector (RL-Mode)	-	●	●	-	-	●	●
Motorised	-	-	●	●	●	●	●
Automatic Target Recognition (ATR)	-	-	-	●	●	●	●
PowerSearch (PS)	-	-	-	-	●	-	●
Guide Light (EGL)	○	○	○	●	●	●	●
Laser Guide GUS74	-	-	-	○	-	○	-
Radio field controller CS10/CS15	○	○	○	○	○	○	○
SmartStation GS09 receiver	○	○	○	○	○	○	○
SmartStation GS15 receiver	○	○	○	○	○	○	○

Requires CS10/CS15 field controller.

● Standard
○ Optional
- Not available

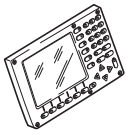
1.2 Angular Accuracies

		1201+ (1")	1202+ (2")	1203+ (3")	1205+ (5")
TC		759 466	759 465	759 464	759 463
TCR	**PinPoint R400**	759 470	759 469	759 468	759 467
	PinPoint R1000	759 474	759 473	759 472	759 471
TCRM	**PinPoint R400**	759 685	759 684	759 681	759 680
	PinPoint R1000	759 479	759 477	759 476	759 475
TCA		754 306	754 305	754 304	754 303
	Laser Guide GUS74	756 452	756 451	756 450	756 449
TCP		754 310	754 309	754 308	754 307
TCRA	**PinPoint R400**	754 314	754 313	754 312	754 311
	PinPoint R1000	754 318	754 317	754 316	754 315
	PinPoint R400 + GUS74	756 456	756 455	756 454	756 453
	PinPoint R1000 + GUS74	756 460	756 459	756 458	756 457
TCRP	**PinPoint R400**	754 322	754 321	754 320	754 319
	PinPoint R1000	754 326	754 325	754 324	754 323

All TPS1200+ models are delivered with one colour touch screen, standard applications, user manuals and container GVP625.

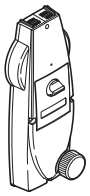
2 Additional Options

2.1 Touch Screen, Second Keyboard



769 992	**GTS23**	2nd keyboard with touch screen and colour display, for TPS1200+/TM30 instruments, for telescope position 2, fitted.

2.2 Communication Side Cover

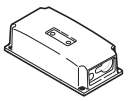


741 963	**GSD02**	Communication side cover, including bluetooth, for non-motorized TPS1200+ instruments (TC, TCR models). Required for SmartAntenna adapter GAD104/GAD110 and RadioHandle RH15. ☞ Can only be ordered together with a new instrument.
755 538	**GSD03**	Communication side cover, including bluetooth, for motorized TPS1200+ instruments. Required for SmartAntenna adapter GAD104/GAD110 and RadioHandle RH15. ☞ Can only be ordered together with a new instrument. For all PowerSearch instruments the GSD03 Communication side cover is standard and does not need separate ordering.

2.3 Internal Memory

738 407	**GIM256**	Internal memory 256 MB for TPS1200+ instruments, fitted at factory. ☞ Can only be ordered together with a new instrument.

2.4 Electronic Guide Light (EGL)



762 692	**EGL5**	Electronic guide light, for all TPS1200+ instruments without ATR.

2.5 Producer Certificates

366 358	**GDI33**	Producer Certificate O.
559 655	**GDI35**	Producer Inspection Certificate M, angle.
663 177	**GDI46**	Producer Inspection Certificate M, distance with reflector EDM.
366 359	**GDI34**	Producer Inspection Certificate M, angle and distance with reflector EDM.
723 945	**GDI51**	Producer Inspection Certificate M, distances with both reflector and refrectorless EDM.
723 946	**GDI52**	Producer Inspection Certificate M, angle and distances with both reflector and reflectorless EDM.

2.6 Calibration Certificates

757 424	**GDI58**	Calibration Certificate - nat. accredited calibration laboratory, total stations, angle, TPS400/800/FlexLine/TPS1200+/TS30/TM30.
757 425	**GDI59**	Calibration Certificate - nat. accredited calibration laboratory, total stations, angle and distance to reflectors, TPS400/800/FlexLine/TPS1200+/TS30/TM30.

3 SmartWorx TPS Application Programs & Software Options

3.1 SmartWorx TPS Application Programs

	Setup includes: • Get station coordinates from GPS, from job or enter manually • Local Resection • Orientation by Known Azimuth • Orientation by Known Backsight • Orientation & Height Transfer to up to 10 target points • Resection Helmert • Resection to up to 10 target points
	Survey includes: • AutoPoint recording • Remote Heights • Target Offset calculations

3.2 SmartWorx TPS Application Programs, Standard

738 478	**COGO includes:** • Arc Calculations • Intersections • Inverse • Line Calculations • Shift, Rotate & Scale (Manual) • Shift, Rotate & Scale (Match Pts) • Traverse
737 844	**Alignment Tool Kit**
740 269	**Determine Coordinate System**
752 691	**DXF Import**
744 617	**GPS Survey**
738 477	**Stakeout**

3.3 SmartWorx TPS Application Programs, Optional

748 188	**Area Division (requires COGO)**
744 866	**Athletics**
748 186	**Cross Section**
734 169	**DTM Stakeout (requires Stakeout)**
760 346	**DXF Export**
742 442	**Hidden Point**
763 403	**Land XML Export**
744 701	**Monitoring (requires Sets of Angles)**
734 167	**Reference Line**
734 181	**Reference Plane**
734 182	**RoadRunner**
746 388	**RoadRunner Rail**
742 591	**RoadRunner Tunnel**
734 168	**Sets of Angles**
734 170	**Traverse**
765 559	**Traverse Adjustment (requires Traverse)**
748 187	**Volume Calculation**

3.4 Software Options

752 656	GPS raw data logging license (for SmartStation with GS09 antenna)
752 873	TPS GLONASS option (for SmartStation with GS09 antenna)

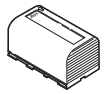
Accessories for Total Station

4 Accessory Sets

734 963	**TPS1200+**	**Accessory Set** Consisting of: GDF121 tribrach, 2 GEB221 batteries, GKL221 charger with two GDI221 charging adapters, MCF256 CompactFlash card 256MB, GEV189 Data transfer cable Lemo 0/USB.

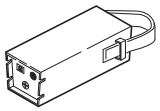
5 Power Supply

5.1 Internal Batteries



733 270	**GEB221**	Lithium-Ion battery, 7.4V/4.4Ah, rechargeable. To be used with TPS1200+.

5.2 External Batteries

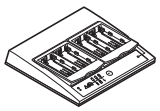


727 367	**GEB171**	External universal battery, NiMH, 12V/9Ah, rechargeable.
749 279	**GEV208**	External power supply unit. To connect TPS1200+ instructions to mains power (220V to 12V). ☞ Requires a GEV52 or GEV187 cable.

5.3 Battery Cables

439 038	**GEV71**	Car battery cable 4m, to connect 12V car battery.
409 678	**GEV52**	Cable, connects TPS1200+ or DNA to external battery.
734 697	**GEV186**	Y-cable, connects TPS1200+ to TCPS28 and external battery.
734 698	**GEV187**	Y-cable, connects TPS1200+ to PC (9-pin RS232 serial) and external battery, 2m.
707 525	**GK1**	Lemo Canon converter 30°, for PC (Lemo to RS232) to be used with GEV186 cable.

5.4 Battery Chargers



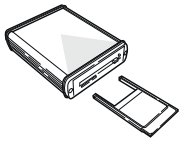
733 271	**GKL221**	Charger PRO. To be used with up to two charging adapters GDI221 or GDI222, charger cable and net adapter included.
733 323	**GDI221**	Adapter for GKL221 for charging 2 Li-Ion batteries GEB241, GEB221, GEB211 or GEB212.
734 389	**GDC221**	Car adapter for the GKL221 charger. Allows the use of the GKL221 with a cigarette lighter; 12V/24V DC/DC converter. Can also be used to power CS10/CS15 field controller directly from a cigarette lighter.
734 752	**GKL211**	Charger BASIC, for Li-Ion batteries GEB221, GEB211 and GEB212, car adapter cable and net adapter included.

6 Data Storage and Data Transfer

6.1 CompactFlash Card

733 257	**MCF256**	CompactFlash card 256MB for TPS instruments and CS10/CS15 field controller.
745 995	**MCF1000**	CompactFlash card 1GB for TPS instruments and CS10/CS15 field controller.

6.2 Card Reader & Adapter



767 895	**MCR7**	Card reader for SD/CF cards.
733 258	**MCFAD1**	CompactFlash PC card adapter.

6.3 Data Transfer Cables

563 625	**GEV102**	Data transfer cable, connects TPS1200+ to PC (9-pin RS232 serial), 2m.
734 697	**GEV186**	Y-cable, connects TPS1200+ to TCPS28 and external battery.
734 698	**GEV187**	Y-cable, connects TPS1200+ to PC (9-pin RS232 serial) and external battery, 2m.
734 700	**GEV189**	Data transfer cable, Lemo to USB connector (incl. USB electronics), 2.0m. Connects TPS1200+/DNA to PC for data transfer. PC driver and user manual included on CD.
756 367	**GEV217**	Data transfer cable, connects CS10/CS15 field controller with CBC01 Lemo connector to TPS1200+, 1.8m.
707 525	**GK1**	Lemo Canon converter 30°, for PC (Lemo to RS232) to be used with GEV186 cable.

7 Optical Accessories

7.1 Eyepiece

377 802	**FOK53**	Magnification eyepiece, additional eyepiece for increasing telescope magnification to 42x (modification in a workshop necessary).
734 514	**GFZ3**	Diagonal eyepiece for telescope.
376 236	**GOK6**	Eyepiece for steep sights, with joint allowing variable sighting angle.

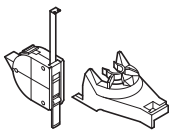
7.2 Autocollimation Set

199 899	**GOA2**	Autocollimation eyepiece.
394 787	**GEB62**	Plug-in lamp, with cable for autocollimation eyepiece.
394 792	**GEB63**	Battery box for autocollimation eyepiece and eyepiece lamp.

7.3 Objective

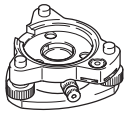
743 504	**GVO13**	Objective solar filter for TPS instruments.

8 Instrument Height Meter



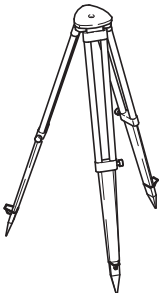
667 718	**GHM007**	Instrument height meter.
722 045	**GHT196**	Distance holder for height meter.

9 Tribrachs



667 304	**GDF121**	Tribrach, without optical plummet, pale green.
667 307	**GDF122**	Tribrach, with optical plummet, pale green.
748 888	**GDF111-1**	BASIC tribrach, without optical plummet, pale green.
667 308	**GDF112**	BASIC tribrach, with optical plummet, pale green/red.

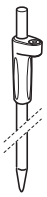
10 Tripods



296 632	**GST20**	Tripod, telescopic, with accessories (plumb bob, carrying strap and side clamp screws), with pouch.
394 752	**GST20-9**	Tripod, telescopic, with accessories.
667 301	**GST120-9**	Tripod, telescopic, selfclosing, with accessories.
332 200	**GST4**	Tripod-star, for setting up tripods on hard and slippery surfaces.

11 Reflector Poles

11.1 Standard Poles

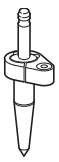


385 500	**GLS11**	Reflector pole, telescopic, with circular bubble, cm and ft graduation, extends to 2.15m.
754 391	**GLS12**	Reflector pole, telescopic to 2.00m with circular bubble, cm graduations.
754 389	**GLS12F**	Reflector pole, telescopic to 2.00m with circular bubble, ft graduations.
766 359	**GLS31**	Reflector carbon-fibre pole with circular bubble and twist lock. Snap-locks at 2.00m for GPS (GNSS) antennas with GAD31 adapter or GRZ122 reflector (SmartPole setup).
667 309	**GLS111**	Reflector pole, with bull's-eye bubble, cm/ft graduation, extends to 2.60m, with red/white 0.20m graduations.
667 310	**GLS112**	Reflector pole, with bull's-eye bubble, cm/ft graduation, extends to 3.65m, with red/white 0.20m graduations.
555 720	**GSR2**	Dual-strut support for GLS11/GLS11K plumbing pole.
667 319	**GSR111**	Dual-strut support for all GLS.
403 428	**GZW412**	Extension 1m long, for reflector pole GLS11 and carriers.

11.2 Hidden Point Pole

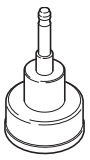
742 329	**GMP112**	Hidden Point pole extension for GMP111 (mini prism pole set). Includes mini prism with holder and 30cm adapter pole.
744 495	**GMP112-0**	Hidden Point pole extension for GMP111-0. Includes mini prism and 30cm adapter pole.

11.3 Mini Pole



403 427	**GLS14**	Mini reflector pole, (prism/target 20cm over point), with circular bubble.

12 Reflector Carriers



667 313	**GRT144**	Carrier with stub, pale green.
667 316	**SNLL121**	Precision carrier, with plate level and zenith-nadir laser plummet.
428 340	**GZR3**	Precision carrier, with plate level and optical plummet.
725 566	**GZR103**	Carrier, with plate level and optical plummet, for reflectors and GPS antenna, pale green.

13 Reflectors

13.1 Circular Reflectors

362 830	**GPR1**	Circular prism, in black housing.
641 618	**GPR111 BASIC**	Circular prism, with holder and target plate.
753 492	**GPR113 BASIC**	Circular prism, with red holder.
641 617	**GPR121 PRO**	Circular prism, with metal holder and target plate.
362 820	**GPH1**	Single-prism holder.
400 080	**GPH3**	Three-prism holder.
362 823	**GZT4**	Target plate, for GPH1.

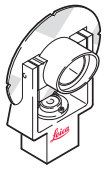
13.2 360° Reflectors

639 985	**GRZ4**	360° reflector.
644 327	**GRZ101**	360° mini prism with 1/4" thread fitting. Not supported by PowerSearch.
754 384	**GRZ122**	360° reflector with 5/8" thread adapter for mounting of GPS antenna.
742 006	**GAD103**	Adapter for attaching GRZ101 to all poles with Leica Geosystems stub.

13.3 Precision Reflectors

555 631	**GPH1P**	Single-prism precision reflector.

13.4 Mini Reflectors

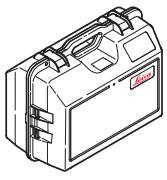


641 662	**GMP101**	Mini prism, incl. bubble, target plate and spike, in bag, also suitable for GLS11 and GRT44 (same height as GPH1, additive constant +17.5mm).
641 762	**GMP104**	Mini prism, with L-bar, for fixed installations.
641 615	**GMP111 BASIC**	Mini prism, incl. bubble, with GLS115 pole set.
642 534	**GMP111-0 BASIC**	Mini prism 0-constant, incl. bubble, with GLS115 pole set.
743 503	**GAD105**	Adapter for GMP111 to all poles with Leica Geosystems stub.

13.5 Reflector Tapes

763 532	**GZM29**	Reflective tape, 20x20mm for short range, pack of 20 pieces.
763 533	**GZM30**	Reflective tape, 40x40mm for medium range, pack of 20 pieces.
763 534	**GZM31**	Reflective tape, 60x60mm for long range, pack of 20 pieces.

14 Additional Containers



754 598	**GVP640**	Hard container for GS09 SmartAntenna and corresponding GS09 SmartStation accessories.
767 828	**GVP642**	Hard container for CS10/CS15 field controller, GS15 SmartAntenna and corresponding SmartStation SmartPole accessories.
744 501	**GDZ66**	Backstraps (2) for GVP640 and GVP642 hard container.
667 451	**GVP609**	Container for 2 circular prisms GPR111/121, 2 carriers/laser plummets and 2 tribrachs.
727 589	**CTC102**	Soft bag with shoulder strap, for prism station, consist of tribrach, prism carrier or laser plummet and prism.

Remote Control

15 Remote Control

15.1 Remote Control Sets

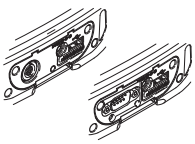
6003611	Advanced CS10 Set for TPS1200+ and TS30/TM30 instruments, consisting of CS10 radio field controller with integrated TPS radio modem, CBC01 Lemo connector modul and SmartWorx Viva licence key (767 909), GHT62 pole holder with GHT63 pole clamp, RH15 RadioHandle, 2 GEB212 battery and GVP642 container.
6003612	Advanced CS15 Set for TPS1200+ and TS30/TM30 instruments, consisting of CS15 radio field controller with integrated TPS radio modem, CBC01 Lemo connector modul and SmartWorx Viva licence key (767 909), GHT62 pole holder with GHT63 pole clamp, RH15 RadioHandle, 2 GEB212 battery and GVP642 container.

15.2 CS10/CS15 Radio Field Controller

767 866	**CS10 Radio Field Controller**	**CS10 Radio Field Controller.** Ruggedized WinCE field controller with full VGA touch display, 1GB NAND flash memory, 512MB SDRAM, CF/SD card slot and 2MP camera. Includes Bluetooth, internal WLAN module, internal TPS radio module, numeric keypad, stylus. Available with either Lemo connector (CBC01) or DSUB connector module (CBC02).

767 871	**CS15 Radio Field Controller**	**CS15 Radio Field Controller.** Ruggedized WinCE field controller with full VGA touch display, 1GB NAND flash memory, 512MB SDRAM, CF/SD card slot and 2MP camera. Includes Bluetooth, internal WLAN module, internal TPS radio module, QWERTY keypad, stylus. Available with either Lemo connector (CBC01) or DSUB connector module (CBC02).
Extra pen		
767 876	**GDZ68**	Extra pen with screw driver for CS10 and CS15 field controller.
Anti-glare display foils		
767 907	**SPF01**	Anti-glare display foils for CS10 and CS15 field controller.

16 Connector Modules for CS10/CS15



767 874	**CBC01**	Lemo connector module with power jack, Lemo (USB and Serial) and USB A host for CS10 and CS15 field controller. ☞ Can only be ordered with CS10/CS15 field controller.
767 875	**CBC02**	DSUB connector module with power jack, DSUB 9-pin, USB A host and USB mini AB for CS10 and CS15 field controller. ☞ Can only be ordered with CS10/CS15 field controller.

17 SmartWorx Viva Software and Application Programs

17.1 SmartWorx Viva Software for CS10/CS15

767 908	SmartWorx Viva software and DVD.
767 910	SmartWorx Viva LT licence key. ☞ Requires 767 908 SmartWorx Viva software.
767 909	SmartWorx Viva licence key. ☞ Requires 767 908 SmartWorx Viva software.
767 911	SmartWorx Viva LT to SmartWorx Viva upgrade option.

17.2 Applications Included with SmartWorx Viva

	SmartWorx Viva	SmartWorx Viva LT
Survey includes:		
• Survey	●	●
• Code points	●	●
• Auto points recording	●	○
• Remote Heights	●	-
• Target Offset calculations	●	-
Setup includes:		
• Get station coordinates from GPS, from Job or enter manually	●	○
• Orientation by known Azimuth	●	●
• Orientation by known Backsight	●	●
• Orientation & Height transfer to up to 10 target points	●	●
• Resection up to 10 target points	●	●
• Resection Helmert	●	●
• Orientation to Line	●	●
Stakeout includes:		
• Navigate to point using various methods: North, point, to and from total station	●	○
• Quality control - checking of coordinate differences before storing	●	-
• Automatic selection of next closest point to stake	●	-
• Graphical selection of point from map	●	●
• Edit heights and offset heights of points	●	-
• Acoustic "reversing beep" when getting closer to point	●	-
COGO includes:		
• Inverse	●	●
• Traverse	●	●
• Intersections	●	●
• Line calculations	●	●
• Arc calculations	●	●
• Shift, Rotate & Scale (manual)	●	●
• Shift, Rotate & Scale (match Points)	●	●
Determine coordinate system:		
• 1 step, 2 step, 3D Transformation	●	●
• All common projections	●	●
Alignment Tool Kit:		
• Horizontal alignments	●	●
• Vertical alignments	●	●
• Cross sections	●	●
• Chainage equations	●	●
Data import: ASCII, DXF	●	●
Data export: Custom ASCII, DXF, LandXML, FBK, RW5, RAW	●	●

● All options and functionality available
○ Limited options and functionality
- Not available

17.3 Additional SmartWorx Viva Software Packages

		SmartWorx Viva	SmartWorx Viva LT
767 913	**Worksite+ includes:** • DTM Stakeout application (767 919) • Reference Line application (767 915) • Survey Surface & Volumes application (767 920)	 ● ● ●	 ● ○ ●
767 912	**Survey+ includes:** • Reference Plane and Face Scan (767 916) • Survey Cross Section (767 918) • Traverse (767 927) • Sets of Angles (767 929) • TPS Hidden Point (767 926) ☞ Requires Art. No. 767 909 SmartWorx Viva.	 ● ● ● ● ●	 - - - - -

● All options and functionality available
○ Limited options and functionality
- Not available

17.4 Optional Applications for SmartWorx Viva

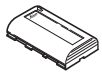
		SmartWorx Viva	SmartWorx Viva LT
767 917	**COGO Area Division** ☞ Requires COGO application.	●	●
767 919	**DTM Stakeout** ☞ Requires Stakeout application.	●	●
767 931	**Monitoring** ☞ Requires Sets of Angles application.	●	-
767 915	**Reference Line** ☞ Requires Stakeout application.	●	○
767 916	**Reference Plane and Face Scan**	●	-
767 921	**RoadRunner**	●	○
767 923	**RoadRunner Rail**	●	-
767 922	**RoadRunner Tunnel**	●	-
767 929	**Sets of Angles**	●	-
767 918	**Survey Cross Section**	●	-
767 920	**Survey Surface and Volumes**	●	●
767 926	**TPS Hidden Point**	●	-
767 927	**Traverse**	●	-

● All options and functionality available
○ Limited options and functionality
- Not available

Accessories for Remote Control

18 Accessories for Remote Control

18.1 Internal Batteries

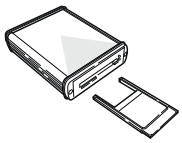


733 269	**GEB211**	Lithium-Ion battery, 7.4V/2.2Ah, rechargeable. To be used with CS10/CS15 field controller and GS09 or GS15 receivers.
772 806	**GEB212**	Lithium-Ion battery, 7.4V/2.6Ah, rechargeable. To be used with CS10/CS15 field controller and GS09 or GS15 receivers.

18.2 Memory Devices

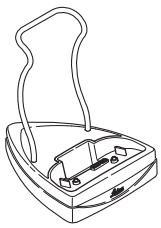
767 856	**MSD1000**	SD memory card 1GB for CS10 and CS15 field controller.
733 257	**MCF256**	CompactFlash card 256MB for TPS instruments and CS10/CS15 field controller.
745 995	**MCF1000**	CompactFlash card 1GB for TPS instruments and CS10/CS15 field controller.
765 199	**MS1**	USB memory stick, 1GB, industrial grade.

18.3 Card Reader & Adapter



767 895	**MCR7**	Card reader for SD/CF cards.
733 258	**MCFAD1**	CompactFlash PC card adapter.

18.4 Docking Station

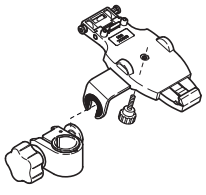


767 906	**CCS01**	Docking station for CS10 and CS15 field controller for charging and data transfer to PC, includes: GEV223 (USB A to USB mini data transfer cable).

18.5 Additional Power Accessories

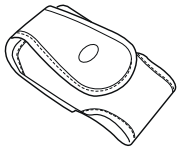
767 900	**GEV235**	1.5m power cable. Allows CS10/CS15 controller to be externally powered via the power jack. Usable in the EU.
773 753	**GEV235-1**	1.5m power cable. Allows CS10/CS15 controller to be externally powered via the power jack. Usable in the US.
773 754	**GEV235-2**	1.5m power cable. Allows CS10/CS15 controller to be externally powered via the power jack. Usable in Japan.
773 755	**GEV235-3**	1.5m power cable. Allows CS10/CS15 controller to be externally powered via the power jack. Usable in the UK.
773 756	**GEV235-4**	1.5m power cable. Allows CS10/CS15 controller to be externally powered via the power jack. Usable in Australia.
734 389	**GDC221**	Car adapter for the GKL221 charger. Allows the use of the GKL221 with a cigarette lighter; 12V/24V DC/DC converter. Can also be used to power CS10/CS15 field controller directly from a cigarette lighter.

18.6 Pole Accessories for CS10/CS15 Field Controller



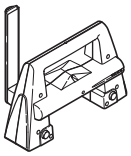
767 879	**GHT62**	Pole holder base plate for CS10 and CS15 field controller.
767 880	**GHT63**	Clamp arrangement for attaching the GHT62 to all poles.

18.7 Softbags and Hand Strap for CS10/CS15 Field Controller



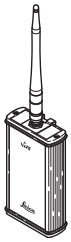
Soft bags		
767 904	**GVP643**	Soft bag for CS10 field controller for transportation and protection against dirt. Including belt loop.
767 905	**GVP644**	Soft bag for CS15 field controller for transportation and protection against dirt. Including belt loop.
Hand strap		
767 877	**GHT61**	Hand strap for CS10 and CS15 field controller with utility hook for attaching to belt or tripod.

18.8 RH15 RadioHandle



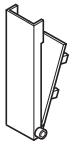
772 300	**RH15**	Radio Handle with integrated radio modem and radio antenna. Used as radio modem for TPS1200+ and TS30/TM30 instruments together with CS10 & CS15 field controller (frequency range 2402 - 2452MHz).

18.9 TCPS28 Modems



772 301	**TCPS28B**	Radio modem (base) with antenna, user manual. Used as radio modem for TPS1200+ and TS30/TM30 instruments to communicate with CS10 & CS15 field controller (frequency range 2402 - 2452MHz).
772 302	**TCPS28R**	Radio modem (remote) with antenna, user manual. Used as external radio to establish radio connection with TCSP28B (frequency range 2402 - 2452MHz).

18.10 TCPS28 Accessories



734 163	**GHT43**	Adapter for mounting TCPS28 radio module on GST20/GST120 tripod.

18.11 Cables for CS10/CS15 Field Controller and TCPS28 Radio Modems

Cable adapters		
734 389	**GDC221**	Car lighter to power jack for CS10/CS15 field controller.
707 525	**GK1**	Lemo Canon converter 30°, for PC (Lemo to RS232) to be used with GEV186 cable.
Data transfer cables		
764 700	**GEV223**	Data transfer cable for connecting CS10/CS15 field controller to PC (USB A to USB mini connector).
767 899	**GEV234**	Cable to connect CS10/CS15 field controller to GS10/GS15 SmartAntenna for data transfer. USB A to Lemo connector (for GS15 SmartStation setup).
772 807	**GEV237**	Cable to connect CS10/CS15 field controller to GS15 SmartAntenna for data transfer. Lemo to Lemo connector (for GS15 SmartStation setup).
Power cables		
758 469	**GEV219**	Power cable, connects CS10/CS15 (with Lemo CBC01 connector module) to external battery.
Y - power cables		
734 697	**GEV186**	Y-cable, connects TPS1200+ to TCPS28 and external battery.

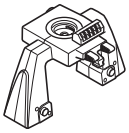
SmartStation

19 SmartStation Setup using GS09 Antenna

19.1 GS09 Antenna

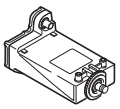
769 646	**GS09**	GPS/GLONASS dual frequency antenna. Can be used with TPS1200+ and TS30/TM30 instruments for SmartStation setup.

19.2 SmartAntenna Adapter



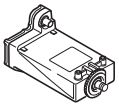
741 965	**GAD104**	SmartAntenna adapter. Required to attach GS09 antenna and/or radio modem in GFU14 housing onto TPS1200+/TS30/TM30. ☞ Requires Communication side cover GSD02 or GSD03 on the TPS side.

19.3 Satelline Radio Modems



Satelline modems		
733 275	**GFU14-0**	Satelline 3AS radio modem (433.525MHz, 25.0kHz channel spacing, 0.5W) already intergrated into housing, fits on GAD104 SmartAntenna adapter. User manual and CE Declaration of Conformity included.
733 276	**GFU14-1**	Satelline 3AS radio modem (406.425MHz, 25.0kHz channel spacing, 1.0W) already intergrated into housing, fits on GAD104 SmartAntenna adapter. User manual and CE Declaration of Conformity included.
738 272	**GFU14-2**	Satelline 3AS radio modem (445.000MHz, 12.5kHz channel spacing, 1.0W) already intergrated into housing, fits on GAD104 SmartAntenna adapter. User manual and CE Declaration of Conformity included.
738 273	**GFU14-3**	Satelline 3AS radio modem (443.000MHz, 12.5kHz channel spacing, 1.0W) already intergrated into housing, fits on GAD104 SmartAntenna adapter. User manual and CE Declaration of Conformity included.
738 274	**GFU14-4**	Satelline 3AS radio modem (440.550MHz, 25.0kHz channel spacing, 0.5W) already intergrated into housing, fits on GAD104 SmartAntenna adapter. User manual and CE Declaration of Conformity included.
738 275	**GFU14-5**	Satelline 3AS radio modem (458.150MHz, 12.5kHz channel spacing, 1.0W) already intergrated into housing, fits on GAD104 SmartAntenna adapter. User manual and CE Declaration of Conformity included.
738 276	**GFU14-6**	Satelline 3AS radio modem (439.8625MHz, 12.5kHz channel spacing, 1.0W) already intergrated into housing, fits on GAD104 SmartAntenna adapter. User manual and CE Declaration of Conformity included.
753 928	**GFU14-7**	Satelline 3AS radio modem (464.5000MHz, 25.0kHz channel spacing, 1.0W) already intergrated into housing, fits on GAD104 SmartAntenna adapter. User manual and CE Declaration of Conformity included.
756 623	**GFU14-8**	Satelline 3AS radio modem (458.6000MHz, 25.0kHz channel spacing, 0.5W) already intergrated into housing, fits on GAD104 SmartAntenna adapter. User manual and CE Declaration of Conformity included.
Cable for Satelline modems		
733 297	**GEV171**	1.8m cable to program the Satelline 3AS radio modem inside the GFU14 housing.

19.4 Pacific Crest Radio Modems

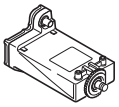


Pacific Crest radio modems must be ordered directly from your local Pacific Crest office or representative.

PDL receive only modems built into the Leica GFU radio housing with 12.5 or 25kHz channel spacing within the following frequency bands are available:

- 410 - 430MHz
- 430 - 450MHz
- 450 - 470MHz
- 223 - 235MHz

19.5 Mobile Phones

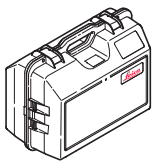


750 242	**GFU24**	Housing with Siemens MC75 GSM/GPRS module (Quad-Band GSM 850/900/1800/1900MHz), fits on GAD104 SmartAntenna adapter.
750 243	**GFU25**	CDMA cellular phone for Canada, Multitech MTMMC-C-N12 for Bell mobility network, integrated into housing, fits on GAD104 SmartAntenna adapter.
744 754	**GFU19**	US CDMA cellular phone Multitech MTMMC-C; intergrated into housing, fits on GAD104 SmartAntenna adapter.

19.6 Antennas for Radio Modems and Mobile Phones

Antennas for radio modems		
743 281	**GAT1201**	Antenna for radio modem for use with SmartStation (400-435MHz).
743 282	**GAT1202**	Antenna for radio modem for use with SmartStation (435-470MHz).
Antennas for mobile phones		
743 283	**GAT1203**	Antenna for 900/1800MHz mobile network for use with SmartStation.
743 284	**GAT1204**	Antenna for US mobile network (800/1900MHz) for use with SmartStation.

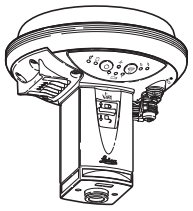
19.7 Container for GS09 Antenna & SmartStation Accessories



754 598	**GVP640**	Hard container for GS09 SmartAntenna and corresponding GS09 SmartStation accessories.

20 SmartStation Setup using GS15 GNSS Receiver

20.1 GS15 GNSS Receiver

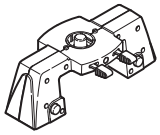


767 789	**GS15**	**Leica GS15 Basic SmartAntenna**
771 502	**GS15**	**Leica GS15 Limited SmartAntenna**
771 503	**GS15**	**Leica GS15 Performance SmartAntenna**
771 504	**GS15**	**Leica GS15 Professional SmartAntenna**

	Leica GS15 Basic	Leica GS15 Limited	Leica GS15 Performance	Leica GS15 Professional
Supported GNSS Systems				
GPS L2	●	●	●	●
GPS L5	○	○	○	●
GLONASS	○	○	○	●
Galileo	○	○	○	●
RTK performance				
DGPS/RTCM	○	●	●	●
RTK up to 5km	○	●	●	●
RTK unlimited	○	○	●	●
Network RTK	○	○	●	●
Leica Lite RTK	○	○	○	●
Position update & data recording				
5 Hz positioning	○	●	●	●
20 Hz positioning	○	○	●	●
Raw data logging	○	●	●	●
RINEX logging	○	○	○	●
NMEA out	○	○	○	●
Additional features				
RTK Reference Station functionality	○	○	●	●

● Standard
○ Optional

20.2 SmartAntenna Adapter

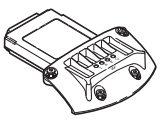


767 802	**GAD110**	SmartAntenna adapter to mount GS15 SmartAntenna. Requires Communication side cover GSD02 or GSD03 on the TPS side.

20.3 Additional GS15 Receiver Options

GNSS Software options		
767 804	**LOP1**	GPS L5 option, enables GPS L5 tracking on a GS10 or GS15 receiver.
767 805	**LOP2**	GLONASS option, enables GLONASS tracking on a GS10 or GS15 receiver.
767 806	**LOP3**	Galileo option, enables Galileo tracking on GS10 or GS15 receiver.
Position update and data recording options		
767 807	**LOP4**	5Hz option, enables to compute positions with an update rate up to 5Hz.
767 808	**LOP5**	20Hz option, enables to compute positions with an update rate up to 20Hz.
767 809	**LOP6**	Upgrade option from 5Hz to 20Hz. (LOP4 to LOP5)
767 810	**LOP7**	Raw data option, allows logging of GNSS raw data on GS10 or GS15 receiver or on a CS10/CS15 field controller.
767 811	**LOP8**	RINEX option, allows logging of RINEX data on GS10 or GS15 receiver.
RTK performance options		
767 812	**LOP9**	5km RTK option, enables RTK positions to be computed up to a distance of 5km from a single base station.
767 813	**LOP10**	Unlimited RTK option, enables RTK positions to be computed from a single base station with no limit of distance.
767 814	**LOP11**	Upgrade from 5km RTK to unlimited RTK. (LOP9 to LOP10)
767 815	**LOP12**	Unlimited RTK and Network RTK, enables RTK position to be computed from a single base station and within a RTK network.
767 817	**LOP14**	Upgrade option for GS10 or GS15 receivers from RTK unlimited only to RTK unlimited including RTK Network. (LOP10 to LOP12)
771 971	**LOP20**	Leica Lite option, to receive System 900 RTK data on the GS10, GS15 receivers.
Other options		
767 816	**LOP13**	RTK Reference station option, allows a GS10 or GS15 receiver to transmit RTK data.

20.4 RTK Modems



Satelline radio modules		
767 819	**SLR1**	Satelline 3AS 403-470 MHz TXO radio. RTK transmitting only UHF radio module to be easily plugged into the GS15 GNSS receiver.
767 820	**SLR2**	Satelline 3AS 403-470 MHz RXO radio. RTK receive only UHF radio module to be easily plugged into the GS15 GNSS receiver.
Pacific Crest radio modules		
767 821	**SLR3-1**	Pacific Crest ADL RX/TX radio 390-430Mhz. RTK receive and transmit UHF radio module to be easily plugged into the GS15 GNSS receiver.
767 822	**SLR3-2**	Pacific Crest ADL RX/TX radio 430-470Mhz. RTK receive and transmit UHF radio module to be easily plugged into the GS15 GNSS receiver.
6002544		Configuration tool kit for programming Satelline and Pacific Crest SLR RTK radio modules; includes programming cable GEV231 and configuration software CD ROM. ☞ SLR radios will be delivered pre-configured according to country-specific radio regulations. In countries where radios need to be configured locally, the configuration tool kit is to be used.

☞ External high power radios such as Satelline Epic Pro (10, 35W), Pacific Crest (2, 35W) or GFU radios can be used for RTK communication instead of the slot-in RTK modems.

Mobile phone modules		
767 823	**SLG1**	5-Band (850/900/1800/1900/2100MHz) Telit GSM/GPRS/UMTS module. Provides full flexibility due to 5-band technology and is globally compatible to all GSM, GPRS, EDGE and UMTS network providers. Can be easily plugged into the GS15 GNSS receiver.
774 689	**SLG2**	4-Band (850/900/1800/1900MHz) Siemens MC75i GSM/GPRS module. Universal 4-band technology supports GSM, GPRS, and EDGE network providers. Can be easily plugged into the GS15 GNSS receiver.
767 824	**SLC1**	Dual band Telit CDMA 1xRTT module for US. Supports Sprint (US) network provider and can be easily plugged into the GS15 GNSS receiver.

20.5 External RTK Antennas

The GS15 receiver is equipped with internal GSM/GPRS/UMTS antenna and internal UHF antenna as standard. In areas of poor GSM/GPRS/UMTS or UHF reception, the use of an external RTK antenna may improve reception.

RTK antenna arm

767 790	**GAD108**	Arm to mount external UHF/GSM antenna to GS15 SmartAntenna, useful in areas of poor radio or GSM network receiption.

Gainflex radio antennas

639 964	**GAT1**	Gainflex radio antenna (frequence range 400-435MHz).
667 243	**GAT2**	Gainflex radio antenna (frequence range 435-470MHz).

Antennas for mobiles phones

667 237	**GAT3**	Antenna for 900/1800MHz mobile network.
734 756	**GAT5**	Antenna for US mobile network (850/1900MHz).

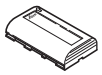
20.6 Memory Devices

767 856	**MSD1000**	SD memory card 1GB for CS10 and CS15 field controller.

20.7 Card Reader

767 895	**MCR7**	Card reader for SD/CF cards.

20.8 Power Supply



733 269	**GEB211**	Lithium-Ion battery, 7.4V/2.2Ah, rechargeable. To be used with CS10/CS15 field controller and GS09 or GS15 receivers.
772 806	**GEB212**	Lithium-Ion battery, 7.4V/2.6Ah, rechargeable. To be used with CS10/CS15 field controller and GS09 or GS15 receivers.

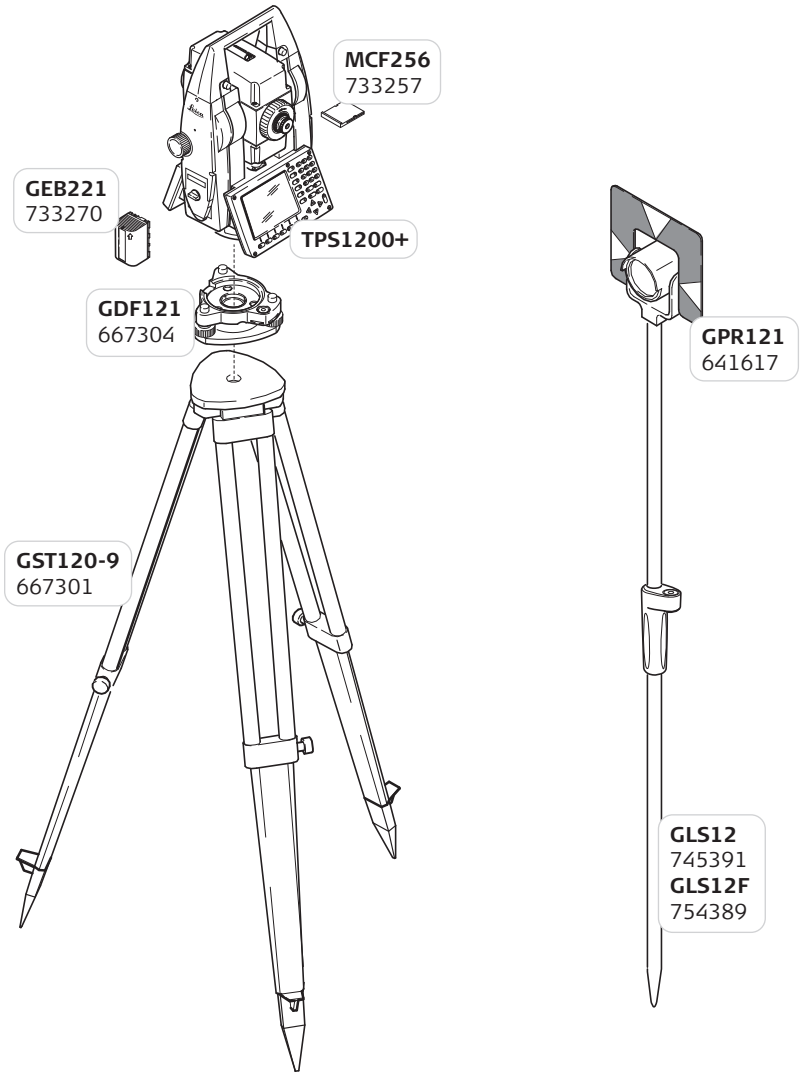
Care Packages

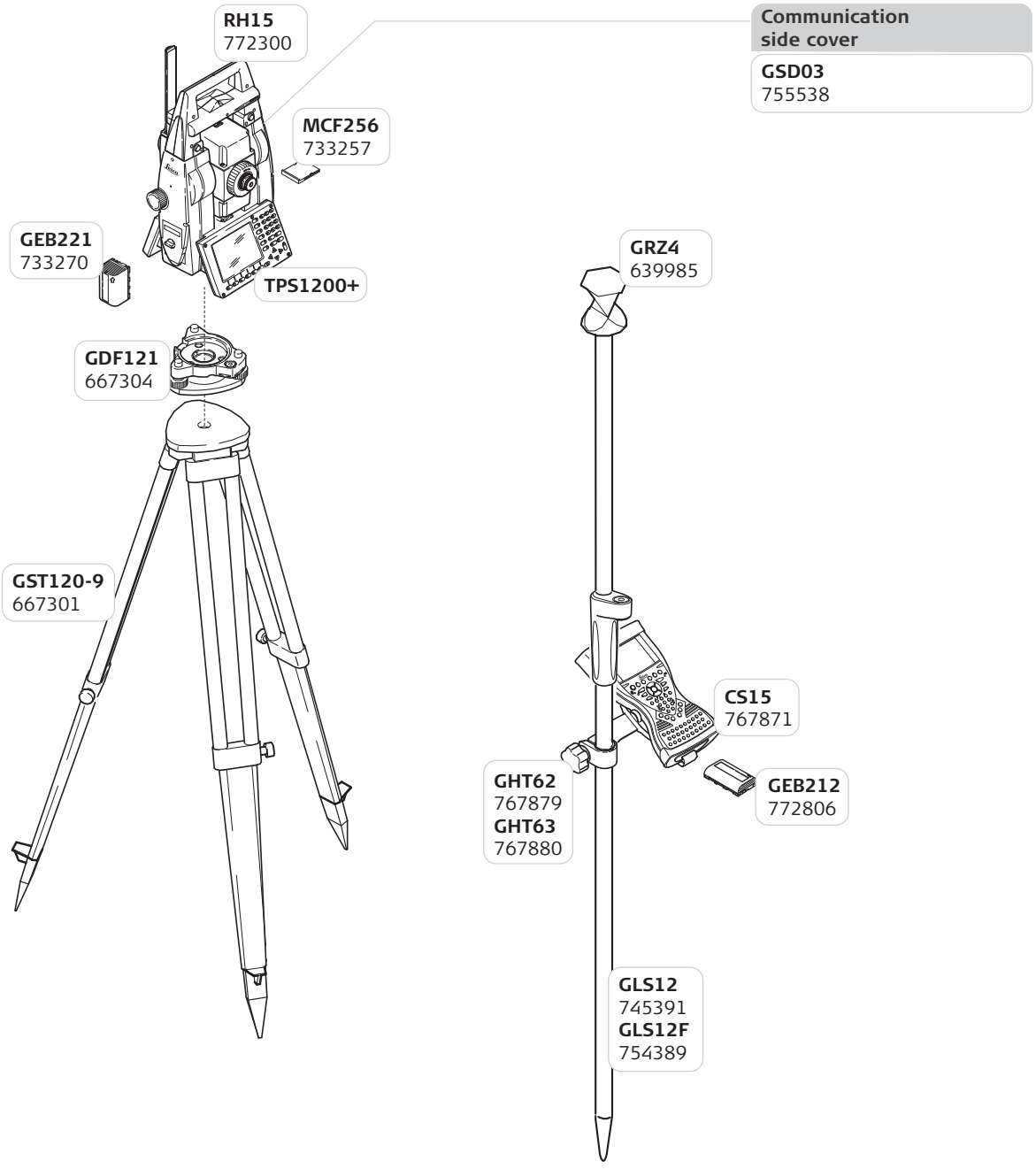
21 Customer Care Packages

A wide selection of comprehensive Customer Care Packages (CCPs) is available bundling Hardware Maintenance, Software Maintenance, Customer Support and Extended Warranty.
For more information about the CCP offering in your country please contact your local Leica Geosystems organization or distribution partner.

Suggested Equipment Setups

22 Conventional Surveying

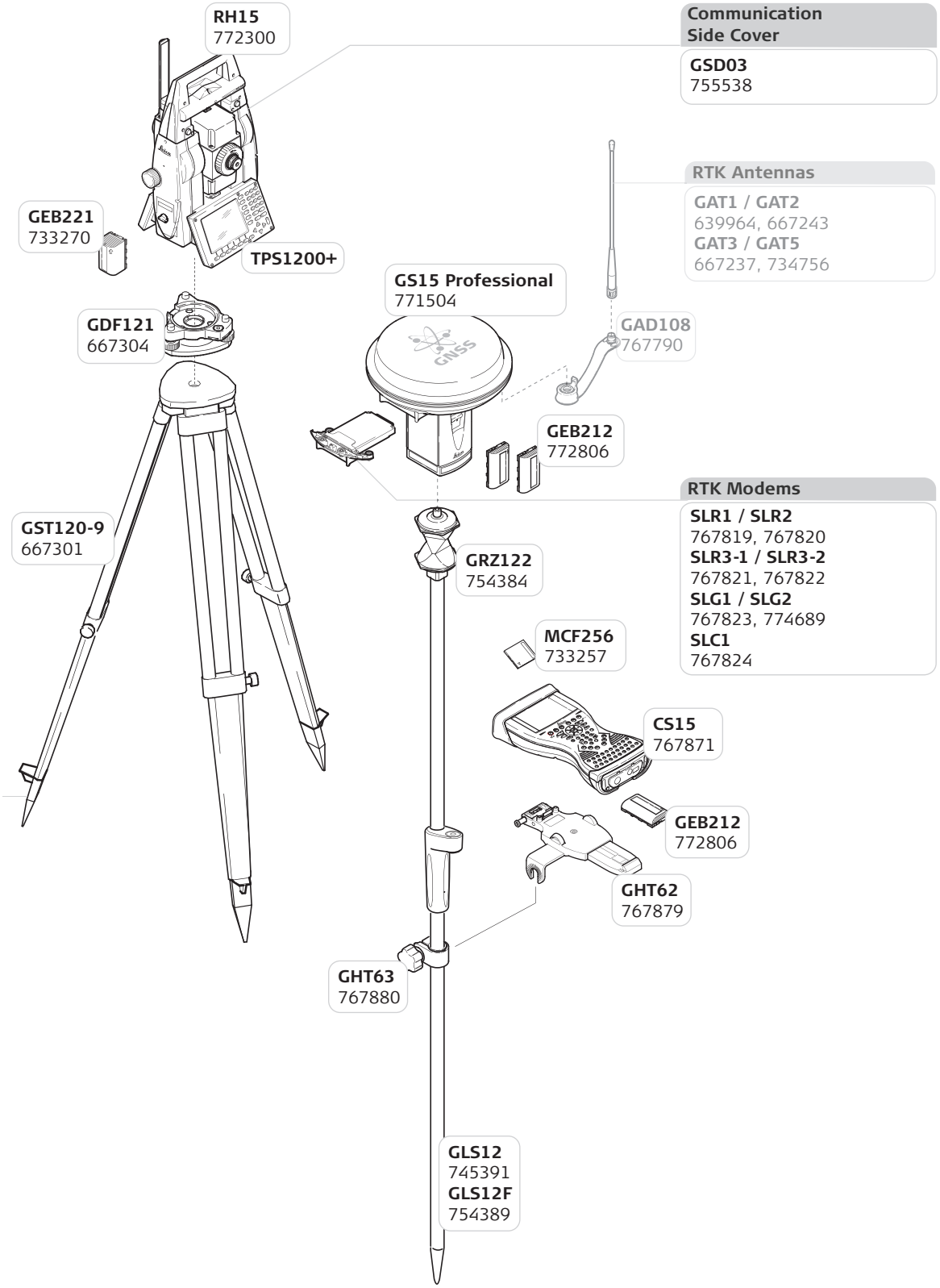




Using SmartWorx Viva functionality on the CS15 radio field controller.

For all PowerSearch instruments the GSD03 Communication side cover is standard and does not need separate ordering.

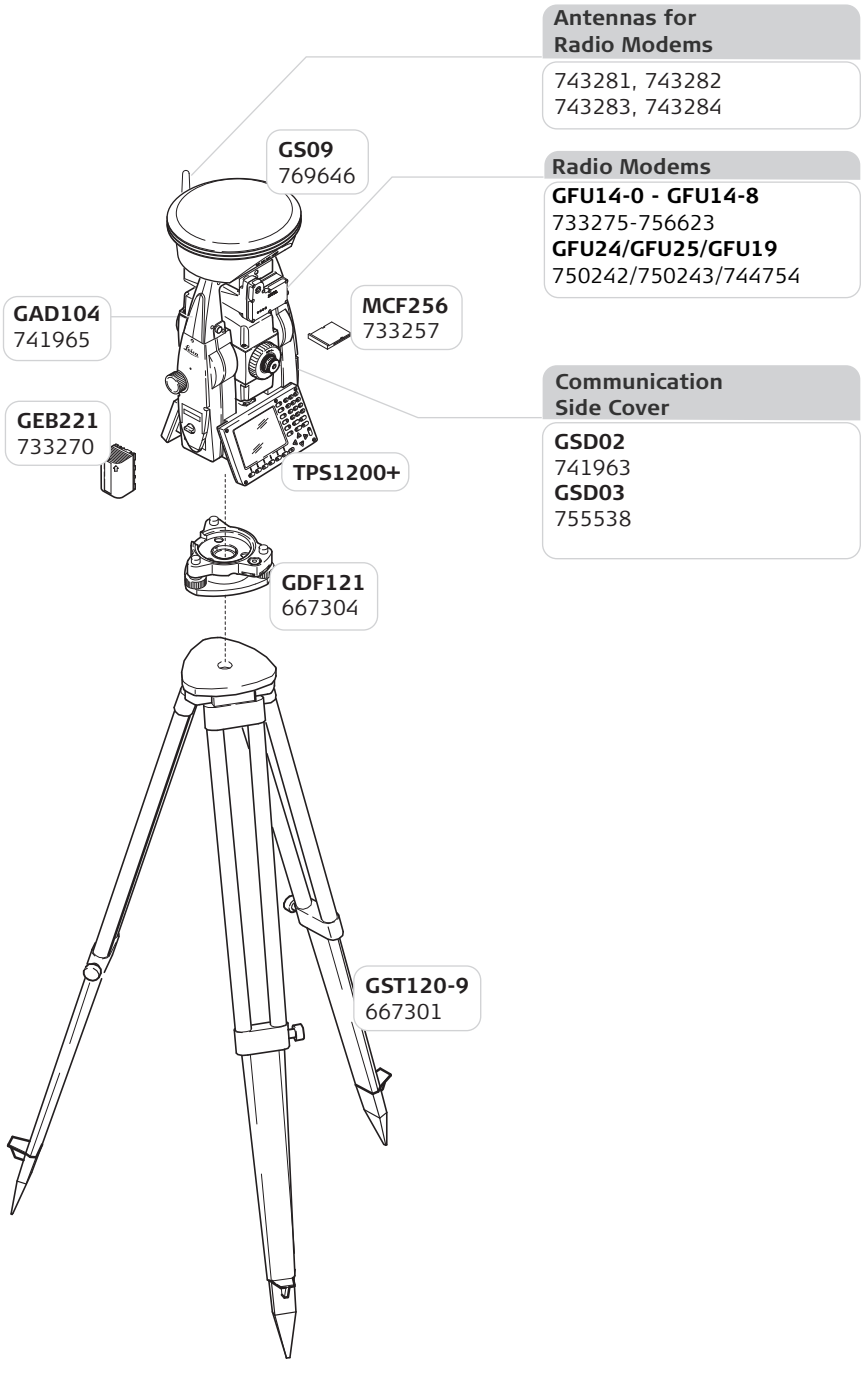
24 SmartPole Surveying



For all PowerSearch instruments the GSD03 Communication side cover is standard and does not need separate ordering.

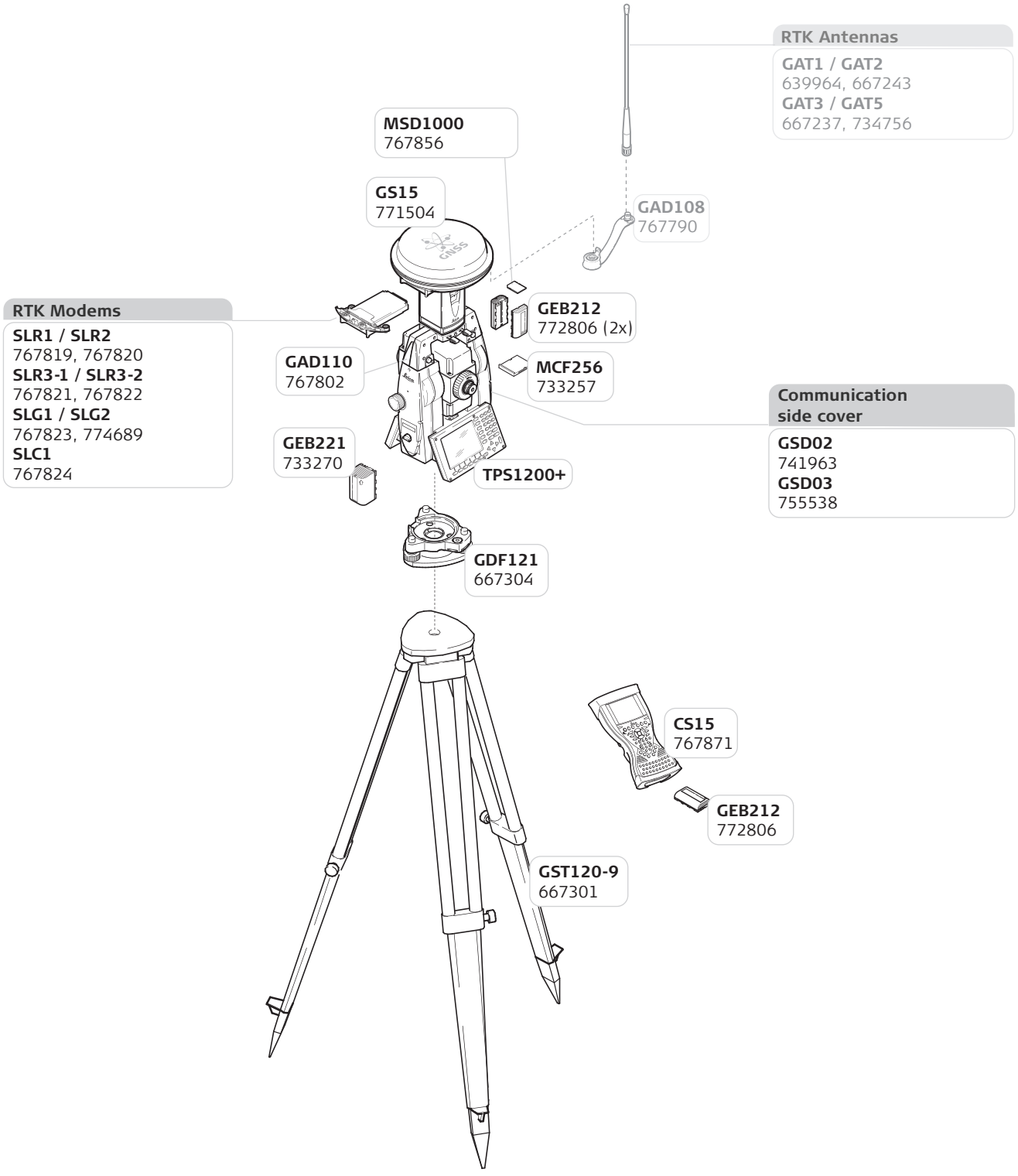
25 SmartStation

25.1 Using the GS09 Antenna



For all PowerSearch instruments the GSD03 Communication side cover is standard and does not need separate ordering.

25.2 Using the GS15 Antenna



For all PowerSearch instruments the GSD03 Communication side cover is standard and does not need separate ordering.

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Distance meter (Prism), ATR and PowerSearch:
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Laser plummet:
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Distance meter (Non-Prism):
Laser class 3R in accordance with IEC 60825-1 resp. EN 60825-1

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